Laser-Scan, LSI and US Army Corps of Engineers in joint research programme for 3D topology

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Company: Laser-Scan
Industry: Local Government, Federal Government, Database, GIS Software Products, State Government, Spatial Modeling/Geomatics/Spatial Statistics, Military/Defense, Geospatial Technology
Location: Cambridge, United Kingdom

Laser-Scan is currently participating in a research programme to deliver database functionality for a 3 Dimensional Topology Model.

This research is being conducted under a Phase II SBIR awarded to LSI by the US Army Engineer Research and Development Center's (ERDC) Topographic Engineering Center (TEC). The ERDC is the premier research and development facility for the U.S. Army Corps of Engineers. It consists of seven laboratories at four geographical sites, with over 2,000 employees, $1.2 billion in facilities, and an annual research program approaching $700 million. It conducts research in both military and civil works mission areas for the Department of Defense and the nation.

The focus of the research is to provide a demonstrator of a 3D topology storage model in a commercial RDBMS. Volumetric 3D topology allows intelligent routing, which is essential for emergency response, search-and-rescue, and tactical military operations. Current commercial 2.5D capabilities utilize 2D data that has been augmented with elevation attributes or warped over an elevation model. However 2.5D data does not represent the complex volumetric relationships between 3D solids and volumes and thus is inadequate to describe, for example, the spaces within a building. The new research will break new ground by providing the basis for commercially viable 3D topology.

An initial feasibility study was conducted by LSI in 2004 under a Phase I SBIR contract, and the Phase II contract was awarded in early 2005. The Phase II research is structured in two parts -

1. Load simulated 3D data into the Oracle database, view 3D models of buildings etc., create the ability to select 3D features and browse attributes, perform 3D routing using the 3D topology information and enable basic 3D spatial queries.
2. Import real 3D data into the Oracle database, and create 3D topology structure for this data, investigating how data could be cleaned and correct on import. Enable line of sight analysis, user configurable routing and more complete 3D spatial querying.

Part one of this study has been completed and a demonstrator is available to view now. The project delivers a proof-of-concept, built on Oracle Database 10g, of the first 3D topology database and front-end. Laser-Scan, based in Cambridge, England provided the first server-side topology solution for Oracle spatial technologies in 2002 called Radius

Topology. Radius Topology has been developed extensively during the last 3 years and supports 2.5D (z values), as well as the topology data model feature of Oracle® Spatial 10g, an option within Oracle Database 10g Enterprise Edition. This background was key to LSI's selection of Laser-Scan to partner in the research programme.

Mike Mathews, Program Director, LSI, commented:

"The outcome of our research will enable a broad range of government and commercial users to derive critical decision-making information from 3D spatial data. We're focused on moving from research to developing products that provide speed, accuracy, and ease of use."

Duncan Guthrie, Managing Director, Laser-Scan:

"We are very pleased to be associated with this cutting-edge research and we are discovering a host of related opportunities. We have a proven position in the market place with respect to robust spatial database engineering and this adds significantly to our capabilities."

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About Laser-Scan
Laser-Scan delivers world-class, innovative business solutions for geographic information. Our technology is the result of over 35 years experience in the development of market-leading database products. Laser-Scan offers a new approach to exploiting location data in enterprise information architectures.

About LSI
For business and government agencies that base critical decisions on geospatial information, LSI offers software products and services to create, update and manage spatial data with superior quality. For over 15 years, LSI has met client needs through the power of our software solutions and the geospatial expertise of our people. www.lsi-gis.com

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